

REMARKS

The Examiner has objected to the parenthetical expressions used in the previously amended claims 2, 6 and 16 and has also objected to all of claims 1-21 for not beginning with an “A”, “An”, or “The”. Accordingly, applicant has amended all of the claims 1-21, to conform to the request of the Examiner.

Applicant has also amended Figure 2 of the drawings by submitting a replacement sheet for Figures 1 and 2 with Figure 2 shown as amended. The gas inlet reference numbers 3 and 4 have been added to more clearly identify the gas inlets for oxygen and hydrogen corresponding to the inlets shown in figure 1. In addition, page 7 of the specification has likewise been amended to reflect the amendment of Figure 2. Accordingly, the objection to the drawings and to the parenthetical expressions in claims 1-21 should now be withdrawn.

The rejection of claims 1-18 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is respectfully traversed.

Applicant has amended claim 1 to remove the transitional phrase “consisting of” and has substituted the recommendation of the Examiner. The first and second electrode layers are now more clearly identified to improve the clarity of claim 1. Claim 21 has also been amended to make it clear that the first compact zone includes the electrode layer with said third porosity. The language in claim 21

considered by the Examiner to be unclear has been deleted. Accordingly, the rejection of claims 1-18 and 21 under 35 USC 112, should be withdrawn.

The rejection of claims 1-10 and 16-18 under 35 USC 103(a) as being unpatentable over Ruhl '955 in view of Itoh (US Pub. 2004/0175607) is respectfully traversed.

Applicant has also amended claim 1 to make it very clear that the first compact zone is a protuberance of the electrolyte layer which extends from the electrolyte layer into the electrode layer and that the protuberance forms an internal seal creating a self-tight fuel cell architecture. Since it forms a self-tight fuel cell architecture, there is no need for any external or additional seal or gasket as used in Ruhl, other than the protuberance formed by the first compact zone. The Examiner admits that Ruhl does not teach a protuberance. More importantly, Ruhl requires the insertion of a gasket to form the seals 7 and 8 in order to seal the fuel cell architecture. In addition, the seals 7 and 8 in Ruhl prevent the passages from directly contacting electrode layers. Accordingly, Ruhl teaches a structure which requires external seals and does not contemplate forming an internal seal from a protuberance of the electrolyte layer.

Itoh teaches an air supply for the fuel cell at the level of the cathode 4, 6 applied from outside of the cell stack and a hydrogen supply 11 which is also applied from outside of the cell stack at the level of the anode tube. Claim 1 has been

further amended to make it clear that the gas inlets define passages within the cell stack, which is not the case in Itoh. The architecture of Ruhl uses air and hydrogen inlets which are connected through the cell stack and not from outside the cell stack. Accordingly, it is not understandable how the architecture of Ruhl can be modified to use an architecture in which air and hydrogen inlets are applied from outside of the cell stack to define passage within the cell as claimed in claim 1. Furthermore, this would not create an internal seal from a protuberance of the electrolyte layer.

For all of the above reasons, claim 1, as amended, is clearly patentable over Ruhl taken individually or in combination with Itoh.

Claims 2-10 and 16-18 are all dependent claims which depend from claim 1 and are therefore believed to be patentable for the same reasons as given above.

The rejection of claims 11-15 under 35 USC 103(a) as being unpatentable over Ruhl, in view of Itoh, as applied to claim 10 and further in view of Fischer, is respectfully traversed.

Claims 11-15 are dependent claims which depend from claim 10 which in turn depends from claim 1. Therefore, all of the remarks given heretofore relative to claim 1, apply to claims 11-15 as well.

Fischer et al does not disclose a protuberance as defined in claim 1, represented by the first compact zone of the electrolyte layer much less teach using

the protuberance of the electrolyte layer to form an internal seal which creates a self-tight fuel cell architecture. This feature is not taught in Fischer et al or in Ruhl or in Itoh.

As regards claim 13, the Examiner is alleging a structure in Itoh which is not taught in the description of Itoh. Once again, the air supply 13 and the hydrogen supply 11 are applied in Itoh from outside of the cell stack and do not form gas inlets defining passages within the cell in direct contact with the electrode layer to which each gas inlet is dedicated as called for in claim 1, to which claim 13 depends.

The bipolar plate referred in claim 7, lies adjacent to an electrode layer and the protuberance in claim 11 relates to a protuberance of the bipolar plate of claim 7, not to the protuberance of the electrolyte layer in claim 1.

For all of the above reasons the dependent claims 7 – 18 are clearly patentable over the teaching of the cited references Ruhl, Itoh and Fischer, taken individually or in combination.

The rejection of claims 19 and 20 under 35 USC 103(a) as being unpatentable over Ruhl in view of Fischer is respectfully traversed.

Claim 19 has been amended so that it is clear that the bipolar plate adjacent to each anode and cathode layer has at least one protuberance extending therefrom. The dense zone of a corresponding anode and cathode layer comprises

a cavity in which the corresponding protuberance of the adjacent bipolar plate can fit. The teaching in Ruhl does not disclose a bipolar plate having at least one protuberance extending therefrom and does not teach a corresponding anode and cathode layer having a dense zone comprising a cavity in which the corresponding protuberance of the adjacent bipolar plate can fit. The Examiner has apparently admitted that Ruhl does not teach this arrangement.

Fischer does not teach a bipolar plate having at least one protuberance extending therefrom adapted for fitting into the cavity in the dense zone of a corresponding anode and cathode layer. Accordingly, the rejection of claim 19 under 35 USC 103 should be withdrawn.

Claim 20 depends from claim 19 and is believed patentable for the same reasons as given above.

The rejection of claim 21 under 35 USC 103(a) over Ruhl in view of Itoh and further in view of Shibata et al is respectfully traversed.

Claim 21 depends from claim 1 and is believed patentable for the same reasons as given heretofore. Moreover, claim 21 has been amended to specify that the first compact zone includes the electrode layer with said third porosity which is clearly not taught in any of the references cited by the Examiner.

For all of the above reasons, applicant now believes that claims 1-21 are in condition for allowance.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that this Amendment w/attachment is being submitted to the USPTO via e-mail EFS Web, addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450, on September 1, 2011.

By _____ 

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